PLACE-TO-PLACE PRICE COMPARISONS FOR SELECTED ALBERTA COMMUNITIES 1985

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PLACE-TO-PLACE PRICE COMPARISONS FOR SELECTED ALBERTA COMMUNITIES 1985

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PREFACE

The Alberta Bureau of Statistics would like to express its appreciation to all those who assisted with the annual Place-to-Place Price Comparison Survey. The Bureau would especially like to thank the many merchants of Alberta who participated in the survey, the municipal offices of the survey towns that provided data, the Alberta Public Utilities Board, the Alberta and Saskatchewan Offices of Canada Mortgage and Housing Corporation, the Municipal Administrative Services Division of Alberta Municipal Affairs, the Planning Secretariat of Alberta Housing, the Edmonton Regional Office of Statistics Canada, and the Prices Division of Statistics Canada in Ottawa.

The Bureau has reviewed its survey activities as part of ongoing efforts to economize resources, as well as to find ways of reducing the burden that Alberta businesses face in responding to surveys. As a result, this will be the last edition of the Place-to-Place Comparisons Survey.

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INTRODUCTION

The results of the annual Place-to-Place Price Comparison Survey For Selected Alberta Communities are presented in this publication. The purpose of the survey is to provide comparisons of price levels in various Alberta communities of a common basket of 250 goods and services. In 1985, the Bureau surveyed a total of nineteen communities. As in previous Place-to-Place Price Comparison surveys, Edmonton prices serve as the base to which the price levels in the other centres are compared. The selected communities, their location and price indexes are presented in Figure 1, page 10.

In the first section of the publication, the reader is introduced to the concept of price indexes and how they relate to the data presented throughout the publication. The methodology employed in the survey is presented in the second section. The third section, the Analysis, provides a descriptive summary of the survey results for both Edmonton-based comparison indexes and intercommunity comparisons.

The Analysis is followed by a three-part appendix. In Appendix A, an explanation of index construction is presented. A detailed discussion of survey procedures is contained in Appendix B, while Appendix C presents a list of survey items and weighting factors.

PRICE INDEXES

A price index is basically a ratio of two numbers: a comparative price, and the base price to which it is compared. As such, it is a tool to measure the differences in one price, relative to the other. Indexes can be constructed to measure price differences for individual commodities, or for a basket or group of commodities. Those which measure differences in individual commodities are referred to as price relatives or simple price indexes. An index which measures differences between a group or basket of goods is generally referred to as an aggregate or complex price index.

In any price index, a base must be selected in order to make comparisons. That base may be a specific point in time such as a base year, or it may be a particular location such as a town or city to which other locations may be compared.

In price indexes, the value of the base is usually set at 100, with all other prices expressed in terms of the base. Those indexes with values greater than 100 indicate that prices are higher than the base. Those of less than 100 indicate that prices are lower. Setting of the base at 100 also allows for price difference comparison and interpretation in percentage terms. For example, an index of 120 indicates a twenty percent difference between the base point and the index value, i.e., prices are twenty percent higher than the reference base. An index of 90 signifies prices are ten percent lower.

The most commonly constructed type of price index today is a temporal index. Temporal indexes are time-based indexes which measure the movement of prices through time. They can be constructed for a single commodity or for an aggregate group of commodities. They can be constructed on a nation-wide level or at an individual outlet level. Temporal price indexes can also measure price changes for a wide variety of time periods, such as day-to-day, year-to-year, or other specified periods. Despite the time period, geographical level or basket of goods selected, the purpose of a temporal index, however, is only to measure price movements over time.

In Canada, the most commonly used temporal price index is the Consumer Price Index. The CPI is a monthly price index produced by Statistics Canada both on a nation-wide basis and on an individual city level.[1] The CPI measures monthly and annual price movements in those goods and services typically purchased by the average urban household in Canada.

A second kind of price index, the type produced for this publication, is a spatial price index. A spatial index is a location-based index, the purpose of which is to compare the prices of one or more commodities between various locations at a specific point in time. Spatial indexes can be developed to produce comparisons between one reference location and several communities or can be constructed to measure price differences between any two communities. Since a spatial index does not measure price movements over time, but instead measures price differences between communities, the price levels of the various comparison communities are always collected at one point in time in order to remove time related biases.

A third type of price index is a cost-of-living index. Cost-of-living indexes attempt to measure whether there has been an increase or decrease over time in the cost of maintaining a designated standard of living for individuals or for specified groups of people. Since the concept of a standard of living encompasses both economic and non-economic factors, not all aspects of a standard of living can be accurately measured. As a result, cost-of-living indexes are difficult to construct. As well, factors such as consumer values, tastes, and preferences often change with time and with income, thus making it difficult to measure whether or not a change has occurred in the cost of living. Changes in prices, income levels and income taxes also contribute to the problems of measuring a standard of living. Hence, cost-of-living indexes are a type of price index seldom constructed and seldom used.

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[1] Currently eighteen cities are measured on a monthly basis.

METHODOLOGY

1. Survey Design

The purpose of the annual Place-to-Place Comparison Survey is to measure price differences between selected Alberta communities for a specific basket of goods and services, at a specific point in time. The price differentials are measured through the construction of spatial price indexes for the selected survey communities.

In order to construct the spatial price indexes, several steps must be taken. First, survey communities must be chosen. Second, a basket of goods and services to be surveyed must be selected. Third, the prices of these goods and services must be collected during a specified period in each centre. Once these steps are completed, the price indexes can then be constructed.

When choosing communities to be included in the place-to-place survey, a number of criteria are employed. The selected locations must fulfill at least one of the following criteria:

(a) The community chosen should be a distribution or trading centre for an area;

(b) The population of the community should be sufficient to support a retail and service trade industry, offering a representative sample of goods and services for pricing; or

(c) There should be planned or ongoing development of a major industrial project for the community or the surrounding area.

In 1985, a total of nineteen survey communities was selected, compared to twenty communities in the 1984 survey. This year, two centres, High River and Whitecourt were omitted, while Calgary was added to the survey. Calgary was included in 1985 for several reasons. It was last surveyed in 1981 and was found to generate price indices very similar to Edmonton. To prevent a

duplication of effort, Calgary was, therefore, omitted in subsequent years. In order to determine, however, if Calgary's price indexes were still similar to Edmonton's, and at the request of users, Calgary was again included as a survey community in 1985.

The 1985 survey locations were as follows:

Edmonton	High Level
Bonnyville	Hinton
Brooks	Lethbridge
Calgary	Lloydminster
Camrose	Medicine Hat
Crowsnest Pass	Peace River
Drayton Valley	Red Deer
Drumheller	Rocky Mountain House
Fort McMurray	Slave Lake
Grande Prairie	

The basket of goods and services selected for the place-to-place survey is a subset of the basket of survey items used by Statistics Canada to construct the 1985 Edmonton Consumer Price Index. In the 1985 Place-to-Place Price Comparison Survey, a total of 250 goods and services was selected. This basket remained identical to that used both in the 1983 and 1984 surveys. The following criteria were employed in selecting from the Statistics Canada list, the basket of goods to be priced for the place-to-place survey.

(a) The items comprise those goods and services thought to be regularly purchased by Alberta consumers living in cities, and small and medium-sized towns.

(b) The items are judged to be available in all selected communities, allowing for price comparability across all nineteen communities.

With survey locations chosen and a basket of goods and services selected, the pricing period must then be selected. Field personnel then collect prices in

each community. In 1985, the survey was conducted from June 10 to June 12. During this three-day period, locally-hired personnel collected prices of the 250-item basket in all nineteen survey locations.

From the survey data collected, indexes for each community are then constructed. In the case of the Place-to-Place Price Comparison Survey, two sets of indexes are produced: Edmonton-based indexes comparing eighteen survey locations with Edmonton, and intercommunity indexes comparing all nineteen communities with each other.

The Edmonton-based indexes are based on the 250-item basket of goods and services outlined in Appendix C. For each survey community, a total of twenty indexes is produced. Of these twenty, three are aggregate indexes. The other seventeen relate to specific commodity groups.

The aggregate indexes constructed for each survey community include:

(a) an all-item index (up to 250 items);
(b) a food index (up to 115 items); and
(c) a non-food index (up to 135 items).

The remaining seventeen category-specific indexes are subsets of the aggregate food and non-food indexes. The specific food indexes are:

Dairy Products
Fats and Oils
Cereals and Breads
Processed Fruits and Vegetables
Fresh Fruit and Vegetables
Meat, Fish and Poultry
Frozen and Packaged Food
Restaurant Food

The non-food price indexes are:

Personal Care Products
Household Supplies
Household Services
Household Equipment
Recreation and Leisure
Transportation
Clothing
Shelter
Utilities

The second set of comparative indexes produced from the pricing data are intercommunity indexes which compare all nineteen communities with each other. These indexes are calculated using identical items found in each community and are based on a subset of the 250-item basket of goods and services used in Edmonton-based comparisons. For these intercommunity comparisons, only an aggregate all-item index is produced.

2. Weighting Factors

Weights have been assigned to each of the items in the basket of goods surveyed in the Place-to-Place Price Comparison Survey. The purpose of the weights is to reflect the relative importance of each item to the consumer. By assigning weights according to the relative importance of a good, costly but seldom purchased items are prevented from exerting undue influence on the index.

As previously discussed, the 250-item basket used in the Edmonton-based comparisons is a subset of the basket used by Statistics Canada for the 1985 Edmonton Consumer Price Index. As such, the basket for the place-to-place survey is weighted according to the CPI expenditure weighting pattern for Edmonton and accounts for 63.89 percent of the CPI in terms of item weights. Further elaboration on weighting factors is presented in Appendix A.

3. Cautionary Notes

The reader should note that when using the indexes in the publication, the following assumptions and limitations should be kept in mind.

1. The purpose of this survey is to produce spatial price indexes which compare price levels in selected communities at a specific point in time. The indexes constructed for this publication are not temporal; that is, they cannot be compared over time to determine price changes.

2. The price indexes presented in Tables 1, 2 and 3 are Edmonton-based price comparisons. In these indexes, the price levels of eighteen communities

are independently compared to Edmonton price levels. The price indexes presented in Table 4 are price comparisons between each of the nineteen communities. These intercommunity comparisons are based on a smaller basket of 102 items that could be precisely matched across all communities. Since only a subset of the 250-item basket is included in the intercommunity comparisons, generalizations regarding price levels should reflect only these items included in the subset.

3. The expenditure weights of the 250-item basket of goods and services are based on the 1985 CPI expenditure weighting pattern for Edmonton. Since expenditure weighting patterns are unavailable for the other survey communities, they are assumed to be the same as Edmonton. It is probable, however, that in communities outside Edmonton, consumption patterns and hence, expenditure weighting patterns differ through the influence of local factors such as customs, tastes, incomes and product availability.

4. The Place-to-Place Price Comparison Survey does not produce cost-of-living indexes for the nineteen selected communities. The present methodology does not incorporate many of the variables necessary in constructing such an index.

ANALYSIS

1. Edmonton-Based Comparisons

The results of the 1985 Place-to-Place Price Comparison Survey are presented in Tables 1, 2 and 3 and Figure 1. It should be noted that in all the indexes presented in these tables and in Figure 1, Edmonton prices serve as the reference base, with each Edmonton index assigned a value of 100. All other indexes reflect community prices in terms of the base index. Therefore, communities with an index of 100 for any component category or for the total basket of goods, experienced prices equivalent to those in Edmonton. Indexes of less than 100 indicate community prices were lower than the base community, while those centres with indexes greater than 100 recorded prices higher than in Edmonton. It should also be noted that the number of items priced and the weighting pattern vary between communities.

Table 1 and Figure 1 present the aggregate all-item indexes for each of the nineteen survey communities. Table 1 also contains the food and non-food indexes, the overall weighting pattern for each community and the number of items surveyed. Table 1 indicates that in 1985, Medicine Hat recorded the lowest all-item index at 91, the result of low food and non-food indexes. High Level, with both the highest food and non-food indexes, recorded the highest all-item index at 121. High Level was closely followed by Fort McMurray with an all-item index of 119.

In ten comparison communities, all-item indexes were higher than in Edmonton. Seven communities had lower all-item indexes, and one community, Red Deer, had prices equivalent to Edmonton. The all-item indexes of those communities higher than Edmonton ranged from 102 to 121, while those with lower indexes ranged from 91 to 99. Those centres with higher all-item indexes include: Calgary, Drayton Valley, Fort McMurray, Grande Prairie, High Level, Hinton, Lethbridge, Lloydminster, Peace River and Slave Lake. Generally, these centres are located at greater distances from large distribution centres when

FIGURE 1

Location and
All-Item Indexes
of Surveyed Communities

June 1985

Edmonton = 100

TABLE 1

Edmonton - Based Comparisons
Number of Items Surveyed, Aggregate Indexes
and Weighting For Selected Communities
June 1985
Edmonton = 100

COMMUNITIES	FOOD		NON-FOOD		ALL-ITEM		Weighting Pattern (% of expenditure on items surveyed)
	Number of Items Surveyed	Index	Number of Items Surveyed	Index	Number of Items Surveyed	Index	
Edmonton	115	100	135	100	250	100	63.89
Bonnyville	115	97	132	99	247	99	63.71
Brooks	115	98	134	100	249	99	63.79
Calgary	115	100	135	105	250	104	63.89
Camrose	115	98	134	96	249	96	63.79
Crowsnest Pass	115	103	129	98	244	99	63.15
Drayton Valley	114	102	132	104	246	104	63.61
Drumheller	115	97	135	99	250	99	63.89
Fort McMurray	115	106	134	122	249	119	63.79
Grande Prairie	115	101	135	104	250	103	63.89
High Level	115	117	127	122	242	121	63.25
Hinton	115	100	134	102	249	102	63.79
Lethbridge	115	97	135	103	250	102	63.89
Lloydminster	115	97	134	110	249	107	63.86
Medicine Hat	115	97	135	90	250	91	63.89
Peace River	115	104	134	107	249	107	63.76
Red Deer	115	100	135	100	250	100	63.89
Rocky Mountain House	114	100	133	99	247	99	63.74
Slave Lake	115	105	127	109	242	108	63.12

Notes: Variations in the weighting pattern and number of items surveyed arise due to the lack of availability and comparability of certain items in some communities.

compared to other survey communities. The two exceptions, Calgary and Lethbridge, recorded all-item indexes only slightly higher than Edmonton. High shelter and utilities indexes in all ten communities are also contributing factors to their higher all-item index.

The overall range of index values between the highest and lowest all-item index shows an increase from 1984, when the spread was 92 to 114, compared to a range of 91 to 121 in 1985.

Table 2 provides the overall food indexes, the indexes of its eight component categories, as well as the food weighting pattern for each community. Seven communities, Bonnyville, Brooks, Camrose, Drumheller, Lethbridge, Lloydminster, and Medicine Hat, recorded food indexes lower than Edmonton. Four communities, Calgary, Hinton, Red Deer and Rocky Mountain House, had indexes of 100, while the remaining seven communities recorded food indexes higher than Edmonton. Overall, the food indexes ranged from 97 (recorded in five communities), to 117, observed in High Level. The second highest food index was recorded in Slave Lake at 106.

In four component categories, dairy products, fats and oils, processed fruits and vegetables, and frozen and packaged food, the majority of communities recorded higher price indexes than Edmonton. The transportation costs of hauling these types of products likely account for the generally higher indexes for these categories in the comparison centres.

The price indexes for cereal and breads, and meat, fish and poultry were generally lower in the comparison communities than in Edmonton. These lower price indexes for many of the surveyed communities are likely the result of low transportation costs, since many meat and bread products are produced either locally or regionally.

As in 1984, the majority of comparison communities recorded lower price indexes than Edmonton for restaurant meals. Of the three centres with higher indexes, Fort McMurray and High Level also had higher total food indexes.

TABLE 2

Edmonton - Based Comparisons
Food Indexes by Component Categories For
Selected Communities
June 1985
Edmonton = 100

COMMUNITIES	TOTAL		COMPONENT CATEGORY INDEXES							
	Food Index	Food Weighting Pattern %	Dairy	Fats and Oils	Cereals and Breads	Processed Fruit and Vegetables	Fresh Fruit and Vegetables	Meat, Fish, Poultry	Frozen and Packaged Food	Restaurant Meals
Edmonton	100	13.57	100	100	100	100	100	100	100	100
Bonnyville	97	13.57	105	106	99	105	95	96	110	83
Brooks	98	13.57	105	105	96	102	102	99	102	86
Calgary	100	13.57	101	102	98	99	99	98	100	101
Camrose	98	13.57	102	106	99	100	99	103	103	83
Crowsnest Pass	103	13.57	107	103	102	106	106	104	104	97
Drayton Valley	102	13.54	111	108	105	105	104	97	108	94
Drumheller	97	13.57	103	104	100	103	103	97	100	87
Fort McMurray	106	13.57	105	110	99	106	114	106	111	104
Grande Prairie	101	13.57	103	105	99	104	117	103	102	90
High Level	117	13.57	124	125	118	124	125	104	125	115
Hinton	100	13.57	108	106	105	102	104	99	106	88
Lethbridge	97	13.57	104	105	96	103	97	102	103	84
Lloydminster	97	13.57	105	108	96	103	101	90	103	92
Medicine Hat	97	13.57	103	107	96	104	97	97	103	87
Peace River	104	13.57	112	106	109	109	114	108	108	87
Red Deer	100	13.57	103	104	99	101	103	101	103	95
Rocky Mtn. House	100	13.54	104	103	101	102	104	101	104	89
Slave Lake	105	13.57	110	114	106	109	120	95	110	99

The third centre, Calgary, recorded a restaurant meal index only slightly higher than Edmonton, and a total food index equivalent to Edmonton. The reader should note that the restaurant meal indexes should be compared with caution, as this item is subject to wide variations in product and service from location to location.

The non-food index, its nine component category indexes, and the non-food weighting pattern for each community are presented in Table 3. Of the eighteen comparison communities, six had non-food indexes lower than Edmonton, two had indexes of 100, while the remaining ten centres recorded higher indexes.

The ten communities which recorded non-food indexes higher than Edmonton are also the same ten centres which experienced higher all-item indexes. As discussed in terms of the all-item indexes, it is likely that the higher transportation costs associated with delivering most types of goods and services to these centres, are also contributing factors to their high non-food indexes.

Overall, the non-food indexes ranged from a high of 122 in Fort McMurray and High Level, to a low of 90 in Medicine Hat. High shelter and utility indexes contributed to the high overall non-food indexes in Fort McMurray and High Level, while in Medicine Hat, very low indexes in these categories resulted in an overall low non-food index.

Within seven of the nine component categories of the non-food index, the majority of communities differed from the Edmonton index (either negatively or positively) by less than ten percent. Only one of these component categories, Household Services, displayed any consistent tendency in the direction of price indexes, with fifteen of the eighteen comparison communities recording lower indexes than Edmonton.

Two component categories, shelter and utilities, showed a wide range of values in the comparison community indexes. For example, in shelter, the comparison indexes ranged from 146 in Fort McMurray to 84 in Medicine Hat. In utilities,

TABLE 3

Edmonton - Based Comparisons
Non-Food Indexes by Component Categories For
Selected Communities
June 1985
Edmonton = 100

COMMUNITIES	TOTAL		COMPONENT CATEGORY INDEXES								
	Non-Food Index	Non-Food Weighting Pattern %	Personal Care Products	Household Supplies	Household Services	Household Equipment	Recreation and Leisure	Transportation	Clothing	Shelter	Utilities
Edmonton	100	50.32	100	100	100	100	100	100	100	100	100
Bonnyville	99	50.14	99	106	92	100	104	99	99	99	95
Brooks	100	50.22	104	104	90	100	101	104	102	96	98
Calgary	105	50.32	111	101	96	108	104	98	102	109	112
Camrose	96	50.22	96	102	86	98	96	99	99	88	113
Crowsnest Pass	98	49.58	105	102	89	93	100	100	101	91	119
Drayton Valley	104	50.06	101	107	96	92	102	111	101	100	111
Drumheller	99	50.32	97	101	93	98	102	98	97	91	134
Fort McMurray	122	50.22	107	106	109	100	107	112	96	146	128
Grande Prairie	104	50.32	107	109	100	98	104	109	98	94	133
High Level	122	49.69	128	122	128	103	112	126	105	126	132
Hinton	102	50.22	111	105	98	94	103	103	97	103	100
Lethbridge	103	50.32	91	104	87	105	103	110	98	104	93
Lloydminster	110	50.29	94	107	90	95	109	118	103	104	135
Medicine Hat	90	50.32	92	103	92	110	101	96	98	84	61
Peace River	107	50.19	106	106	98	100	105	110	100	105	127
Red Deer	100	50.32	93	101	88	110	101	101	102	98	103
Rocky Mtn. House	99	50.19	100	99	88	89	105	99	98	96	108
Slave Lake	109	49.55	116	109	95	114	111	103	110	109	125

Medicine Hat also recorded the lowest index at 61, attributable to local ownership of and close proximity to natural gas fields. The highest index occurred in Lloydminster at 135. It should also be noted that within the shelter and utilities categories, no consistent price index trends attributable to such factors as community size or distance from large distribution centres emerged.

2. Intercommunity Comparisons

Intercommunity comparison indexes for the nineteen survey communities are presented in Table 4. Unlike the previous indexes in Tables 1, 2 and 3, which provided comparisons for Edmonton with each community, the intercommunity indexes in Table 4 comprise comparisons between any two communities with each other.

The basket of goods and services used in the intercommunity indexes is not the full basket of 250 items used for the Edmonton-based indexes, but consists of a subset of 102 items which could be precisely matched across all nineteen survey communities. Substitute items were eliminated from the intercommunity basket to avoid any spurious price differences which could be caused by the comparison of slightly differing substitute items. The total weight of the 102-item basket is 46.53 percent of the 1985 CPI weighting for Edmonton. This compares to a weight of 63.89 percent used for the Edmonton-based comparisons. Table 5 presents the number of items surveyed in each category and the category weight used in calculating the intercommunity index. Table 6 outlines the number of items per category not used in the intercommunity survey, as well as the weights of those items not used.

The reader is advised that comparisons should not be made between the all-item indexes of Table 1 and the intercommunity indexes of Table 4 for two reasons. First, as explained above, the baskets of items used to build the two indexes differ. Second, since the weighting patterns of the two indexes differ, the relative influence of certain goods within the two indexes may mean, for example, that in Table 1, community A could have a lower all-item index than

community B, whereas in Table 4 it may have a higher all-item index. The reader is advised, therefore, to keep these differences in mind and to avoid comparisons between Table 1 and Table 4.

In order to correctly interpret the price indexes presented in Table 4, some examples and discussion of intercommunity index construction are provided below.

When constructing intercommunity price indexes, several steps are followed. First, the total price of the basket of goods and services is calculated for every centre.[2] Each community can then be compared with all other communities. The next step is to construct the comparative indexes.

In any comparison between two centres, one community must serve as the base, while the other centre serves as the comparison community. Once the comparison and base communities are selected, the intercommunity price index is calculated as follows:

$$\frac{\text{Price of basket in comparison community}}{\text{Price of basket in base community}} \times 100 = \text{Intercommunity Price Index}$$

To illustrate intercommunity calculations with examples from Table 4, two centres, Drayton Valley and Medicine Hat, have been selected. The reader should note that when comparing two different communities, two sets of comparisons can be made. For example, Drayton Valley can be compared to Medicine Hat, with Medicine Hat as the base community, or, Medicine Hat can be compared to Drayton Valley, with Drayton Valley serving as the base.

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[2] Since several prices are collected for each item in the basket, the average price of each item in the basket is calculated. The average price of each item is then multiplied by the item weight. All the weighted prices are then added together to arrive at a total weighted price for the basket.

TABLE 4

Intercommunity Comparison Indexes for 102 Selected Items

		1	2	3	4	5	6	7	8
	Comparison Community / Base Community	Edmonton	Bonny-ville	Brooks	Calgary	Camrose	Crowsnest Pass	Drayton Valley	Drum-heller
A	Edmonton	100	99	102	108	89	96	10	90
B	Bonnyville	101	100	103	109	90	97	102	91
C	Brooks	98	97	100	106	87	95	100	89
D	Calgary	92	92	94	100	82	89	94	83
E	Camrose	113	112	115	122	100	108	114	102
F	Crowsnest Pass	104	103	106	112	92	100	105	94
G	Drayton Valley	99	98	100	107	88	95	100	89
H	Drumheller	111	110	113	120	98	107	112	100
I	Fort McMurray	71	71	73	78	64	69	73	65
J	Grande Prairie	106	105	108	115	94	102	108	96
K	High Level	78	78	80	85	70	75	79	71
L	Hinton	99	98	100	107	88	95	100	89
M	Lethbridge	91	91	93	99	81	88	93	82
N	Lloydminster	89	89	91	97	79	86	91	81
O	Medicine Hat	114	113	116	123	101	110	115	103
P	Peace River	93	92	94	100	82	89	94	84
Q	Red Deer	101	100	102	109	89	97	102	91
R	Rocky Mountain House	101	100	103	109	90	97	103	91
S	Slave Lake	93	92	94	100	82	89	94	83

Note:

(a) When comparing one community to the remaining eighteen communities, read down the columns in Table 4. For example, when comparing Drayton Valley to all other centres, read down column 7.

(b) When using one community as the base and comparing all other communities to this base, read across the rows in Table 4. For example, when comparing all other communities to Drayton Valley, read across Row G.

TABLE 4

(continued from opposite page)

9	10	11	12	13	14	15	16	17	18	19	
Fort McMurray	Grande Prairie	High Level	Hinton	Leth-bridge	Lloyd-minster	Medicine Hat	Peace River	Red Deer	Rocky Mountain House	Slave Lake	
139	94	128	101	109	112	88	108	99	99	108	A
140	95	129	102	110	113	89	109	100	100	109	B
137	93	125	100	107	110	86	106	98	97	106	C
129	87	118	94	101	103	81	100	92	91	100	D
157	106	144	114	123	126	99	121	112	111	122	E
145	98	133	105	114	116	91	112	103	103	112	F
137	93	126	100	108	110	87	106	98	97	107	G
155	104	142	112	121	124	97	120	110	110	120	H
100	68	92	73	78	80	63	77	71	71	78	I
148	100	136	108	116	119	93	115	105	105	115	J
109	74	100	79	86	88	69	85	78	77	85	K
137	93	126	100	108	110	87	106	98	97	107	L
127	86	117	93	100	102	80	99	91	90	99	M
124	84	114	91	98	100	78	96	89	88	97	N
159	107	145	115	124	127	100	123	113	112	123	O
129	87	118	94	101	104	81	100	92	92	100	P
140	95	129	102	110	113	88	109	100	99	109	Q
141	95	129	103	111	113	89	109	101	100	109	R
129	87	118	94	101	104	81	100	92	91	100	S

Using Drayton Valley as the comparison community, Medicine Hat as the base, and incorporating the price data from each community, the price index becomes:

$$\frac{\text{Price of basket in Drayton Valley (comparison community)}}{\text{Price of basket in Medicine Hat (base community)}} \times 100 = 115$$

The index indicates that prices for the 102-item basket in Drayton Valley, when compared to the prices in Medicine Hat, are fifteen percent higher. The reader can arrive at this comparison in Table 4 by reading down column 7 in which Drayton Valley acts as the comparative community, and reading across Row O, the row in which Medicine Hat serves as the base community.

When Medicine Hat and Drayton Valley are compared, with Medicine Hat serving as the comparative community and Drayton Valley as the base, the index is calculated as follows:

$$\frac{\text{Price of Basket in Medicine Hat (comparison community)}}{\text{Price of Basket in Drayton Valley (base community)}} \times 100 = 87$$

By reading down column 15 in which Medicine Hat is the comparative community, and across Row G where Drayton Valley is the base community, the reader will arrive at this index comparison. In this case, an index of 87 signifies that the prices in Medicine Hat are 87 percent of those in Drayton Valley, or thirteen percent lower.

This example highlights an important point when interpreting price indexes. In the first case, with Medicine Hat as the base community, the Drayton Valley price index of 115 indicates that prices, on average, are fifteen percent higher in Drayton Valley than in Medicine Hat. However, it would be incorrect to say Medicine Hat prices are fifteen percent lower than in Drayton Valley. In order to determine how much lower Medicine Hat is than Drayton Valley, it is necessary to re-calculate the price indexes for both communities, using

Drayton Valley as the base community (i.e. price index = 100). A price index of 87 for Medicine Hat is the result of this re-calculation, indicating prices are thirteen percent lower than in Drayton Valley. The reader must bear in mind the importance of which community is used as the base (i.e., price index = 100) before drawing conclusions as to which community has higher (or lower) prices, and by how much.

Since two different sets of comparisons can be made when comparing two different communities, the reader should note the following:

(a) When comparing one community to the remaining eighteen communities, read down the columns in Table 4. For example, when comparing Drayton Valley to all other centres, read down column 7.

(b) When using one community as the base and comparing all other communities to this base, read across the rows in Table 4. For example, when comparing all other communities to Drayton Valley, read across Row G.

Table 5

Intercommunity Survey Items and Weighting Pattern

Category	Number of Items Surveyed	Weighting %
All Items	102	46.53
Food	50	8.76
Non Food	52	37.77
Dairy Products	7	1.27
Fats and Oils	1	.01
Cereals and Breads	4	.86
Processed Fruit and Vegetables	5	.14
Fresh Fruit and Vegetables	6	.50
Meat, Fish, Poultry	10	1.82
Frozen and Packaged Food	12	1.06
Restaurant Meals	5	3.10
Personal Care Products	8	1.31
Household Supplies	3	.26
Household Services	4	.69
Household Equipment	1	.04
Recreation, Leisure	11	4.76
Transportation	10	8.32
Clothing	8	1.02
Shelter	4	17.27
Utilities	3	4.10

Table 6

Items and Weighting Pattern Not Used in Intercommunity Survey

Category	Number of Items Surveyed	Weighting %
All Items	148	17.36
Food	65	4.81
Non Food	83	12.55
Dairy Products	5	.58
Fats and Oils	4	.35
Cereals and Breads	8	.71
Processed Fruit and Vegetables	10	.30
Fresh Fruit and Vegetables	8	.75
Meat, Fish, Poultry	14	1.30
Frozen and Packaged Food	16	.82
Restaurant Meals	0	.00
Personal Care Products	12	1.11
Household Supplies	11	.86
Household Services	3	.10
Household Equipment	9	.69
Recreation, Leisure	9	1.07
Transportation	4	4.96
Clothing	35	3.76
Shelter	0	.00
Utilities	0	.00

APPENDIXES

APPENDIX A

INDEX CONSTRUCTION

As previously discussed, a price index is a measure by which to compare differing groups of price data. As such, price indexes can be constructed for single commodities or for groups of commodities. They can also be constructed to measure price changes through time or to compare price levels between selected locations. Since the price indexes in this publication are location-based, the examples presented in the following discussion will illustrate the construction of indexes which compare prices between various locations.

The most elementary form of a price index is that which compares prices of a single commodity. Such indexes are referred to as price ratios, or simple price indexes.

A price ratio simply shows through the means of a ratio, the relationship of two prices; that is, the value of one price relative to another price. Price ratios or simple price indexes are composed of a base price and a comparative price and are usually expressed as the percentage difference between that price selected as the base of the comparison and that price being compared to the base.

As an example of simple price index construction comparing two locations, suppose that community A is selected as the base community and community B as the comparison community. Using a litre of milk as the commodity being compared, further suppose that a litre of milk costs $.75 in community A, but costs $.85 in the comparative community. In this example, the simple price ratio would be:

$$\frac{\text{Price of a litre of milk in Community B}}{\text{Price of a litre of milk in Community A}}$$

Substituting the prices from the example, the price ratio is:

$$\frac{.85}{.75} = \frac{1.13}{1}$$

To express this in terms of an index number, the ratio is multiplied by 100, or:

$$\frac{.85}{.75} \times 100 = 113$$

The index value of 113 indicates that the price of a litre of milk is thirteen percent higher in community B than in community A.

Simple price indexes or ratios such as the one constructed in the above example can be constructed for each commodity surveyed in the place-to-place survey. If, however, a comparison is to be made between communities of several commodities at once, simple price indexes cannot be employed since such indexes can only compare prices of single commodities at any one time. Instead, more complex indexes need to be constructed which capture in a single number, a comparable value comprising several commodities. The most common method of comparing several prices at once between different communities is to compare them on average; that is, to take an average of the simple price ratios of the various goods and services being compared.

For example, suppose prices have been observed for three specific goods in two communities, with location A serving as the base community and location B representing the comparative community. The price of good 1 in location A is denoted as P_{A1}, and in location B it is denoted as P_{B1}. Therefore, the price ratio for good 1 would be: $\frac{P_{B1}}{P_{A1}}$, that for good 2 would be $\frac{P_{B2}}{P_{A2}}$, and for good 3 would be $\frac{P_{B3}}{P_{A3}}$.

To construct an aggregate price index which compares the average of the price ratios between the two communities for these goods, the price ratios would be summed and then divided by the number of entries in the sum. Finally, the average price index of the three commodities would be multiplied by 100 in order to express it as an aggregate index value. The price index construction would be as follows:

$$\text{Aggregate Price Index} = \frac{\frac{P_{B1}}{P_{A1}} + \frac{P_{B2}}{P_{A2}} + \frac{P_{B3}}{P_{A3}}}{\text{Number of ratios}} \times 100$$

An aggregate price index of 145 would, therefore, indicate that the price of the selected goods in location B would be forty-five percent higher than in location A; or conversely, a price index of 97 would indicate that prices would be three percent lower in location B than in location A.

Price indexes constructed in this manner are referred to as unweighted price indexes. The disadvantage of unweighted price indexes is that the relative importance to the consumer of the various goods surveyed is not taken into consideration. Instead, equal weight or importance is assigned to all goods and their prices.

Assigning equal weight to goods that in reality have varying roles of importance to the consumer can lead to an index in which some commodities exert undue influence, thus distorting the value of the index. For example, for most consumers, a change in the price of pepper would not carry the same significance as a change in the price of such goods as bread or beef. If, however, these goods have been assigned equal weight, the resulting change in the overall index value would not accurately measure the change in the price of those goods to the consumer. To overcome this problem, weighted prices can be used to construct the index. That is, goods purchased can be assigned a factor reflecting their relative importance to the consumer. Using the index equation outlined above, each price ratio is assigned a weight in accordance to its importance.

Weighted price indexes are also necessary in calculating spatial indexes. Otherwise a large price difference between communities for a good which is less important, or purchased less often, would exert undue influence on the spatial indexes and distort the true magnitude of the overall price difference between communities.

In order to avoid the above-outlined conceptual problems, weights have been assigned to all goods and services priced in the 1985 Place-to-Place Price Comparison Survey. The weights are the same as those used by Statistics Canada for the 1985 Edmonton Consumer Price Index. Further elaboration on construction of the weighted indexes and the weights used is provided in Appendix B.

APPENDIX B

METHODOLOGY

The basket of goods and services priced throughout the nineteen survey communities consisted of 250 items chosen from the 1985 Edmonton Consumer Price Index Survey. A number of items on the CPI list were excluded, however, because of a lack of availability or comparability of these items in some of the survey locations.

1. Price Collection

Item prices were surveyed through personal visits by Bureau staff to retail and service establishments in each survey community. Whenever possible, staff were hired by the Bureau in the local communities to conduct the pricing. To ensure a representative sample of prices, survey personnel collected a minimum of three prices per item in each community. Pricers were asked to disregard special or sale prices on an item and to record only regular prices in order to reduce spurious price differences. To minimize time-related biases, prices in all centres were collected within a three-day period, June 10-12, 1985.

2. Matching of Items

To ensure accuracy and consistency in the pricing of the 250-item basket of goods in the nineteen survey locations, it was essential that all the items be carefully matched across all communities. In order to facilitate this process, pricers were provided with specification sheets containing a detailed description of each article to be priced, including brand name and size. If the specified brand was unavailable, a list of alternatives was also provided. Survey personnel were asked to price one of the specified brands and to record the price, and other details such as size, colour and style number. If none of the specified brands was available, pricers were asked to price a close substitute and provide a

detailed description of the item. This substitute item was then priced in Edmonton to ensure comparability between the two communities. By this procedure, item consistency was assured between Edmonton and each community, but could differ among communities for some articles. If a reasonable substitute was unavailable in some communities, these articles were excluded from the survey list for those particular centres.

3. Special Pricing Procedures

Some items of the 250-article basket could not be priced directly in the field through the retail or service outlets of the survey communities. Those items which required special pricing procedures included: monthly housing payments, rental costs, property taxes, as well as natural gas, electricity, water and sewage charges.

Monthly housing payments were obtained through several steps. Housing prices for a 110 square meter bungalow on an average size lot were provided for each survey location by the appraisal departments of Canada Mortgage and Housing Corporation. A survey of the average mortgage rate and housing down payment in June of 1985 was also conducted. These figures were applied to the total house price in order to obtain average monthly housing payments reflective of each centre.

Average monthly rental costs for each survey community were calculated from annual rental cost surveys conducted by Alberta Housing and Canada Mortgage and Housing.

Data provided by Alberta Municipal Affairs concerning total residential assessments and residential mill rates were used to derive the average monthly tax bill per household for each survey community.

In order to calculate monthly natural gas, electricity, and water and sewage charges per household in each of the survey communities, an average monthly household consumption figure was obtained for each item

from the Alberta Public Utilities Board. The consumption figure was then multiplied by the applicable utility rates to derive typical household utility costs in each community.

4. Calculation of Indexes

Appendix A provides the reader with the basic steps in calculating weighted price indexes along with a discussion of the need for and selection of weights when calculating the weighted price indexes. As outlined in the methodology, price ratios are first constructed, comparing each community with Edmonton. These are then weighted and summed to arrive at the various indexes.

A more specific step-by-step outline of the index calculations used in the Place-to-Place Price Comparison Survey is as follows:

Step 1: Ratio of Prices: $$\frac{\text{Average price of item in Community Y}}{\text{Average price of item in Edmonton}}$$

Step 2: Weighted Ratio : Ratio of prices x Item weight

Step 3: Category Index : $$\frac{\text{Sum of weighted ratios for a specific category}}{\text{Sum of item weights for specific category}} \times 100$$

APPENDIX C

TYPES OF ITEMS SURVEYED BY COMPONENT CATEGORY

FOOD ITEMS

Category	Weight
Dairy Products	**1.85**
Fresh Milk	
Whipping Cream	
Sour Cream	
Yoghurt	
Cottage Cheese	
Cheddar Cheese	
Cream Cheese	
Processed Cheese	
Butter	
Canned Milk	
Powdered Milk	
Ice Cream	
Fats and Oils	**.36**
Margarine	
Shortening	
Cooking Oil	
Salad Dressing	
Non-Dairy Creamer	
Cereals and Breads	**1.57**
Breakfast Cereal	
White Flour	
Cake Mix	
Macaroni	
Rice	
Cooked Cereal	
White Bread	
Hot Dog Rolls	
Bran Muffins	
Cookies	
Crackers	
Frozen Cake	
Processed Fruits & Vegetables	**.45**
Canned Peaches	
Canned Pears	
Canned Apple Sauce	
Canned Pineapple	
Canned Fruit Cocktail	
Canned Apple Juice	
Canned Orange Juice	
Raisins	
Canned Corn	
Canned Peas	
Canned Green Beans	
Canned Kidney Beans	
Canned Baked Beans	
Canned Tomatoes	
Canned Tomato Juice	
Fresh Fruit and Vegetables	**1.25**
Oranges	
Bananas	
Apples	

Category	Weight
Fresh Fruits & Vegs. (cont'd)	
Grapefruit	
Grapes	
Potatoes	
Tomatoes	
Lettuce	
Carrots	
Celery	
Onions	
Cabbage	
Turnips	
Cucumbers	
Meat, Fish, Poultry	3.12
Sirloin Steak	
Round Steak	
Standing Rib Roast	
Blade Roast	
Stewing Beef	
Hamburger	
Liver	
Bacon	
Sausage	
Weiners	
Smoked Ham	
Cottage Roll	
Pork Chop	
Pork Shoulder Steak	
Lamb	
Chicken	
Turkey	
Eggs	
Frozen Fish	
Canned Meat	
Luncheon Meat	
Canned Shrimp	
Canned Salmon	
Canned Tuna	
Frozen & Packaged Food	1.87
Frozen Orange Juice	
Frozen Fruit	
Frozen Potatoes	
Frozen Peas	
Frozen Corn	
Frozen Fish Specialty	
Frozen Meat Pie	
Canned Soup	
Baby Food	
Chocolate Bar	
Sugar	
Baking Soda	
Corn Syrup	
Drink Crystals	
Dessert Crystals	
Honey	
Jam	
Peanut Butter	
Spices	
Pickles	
Catsup	
Macaroni Dinner	
Canned Stew	
Potato Chips	

Category	Weight
Frozen & Packaged Food (cont'd)	
Roasted Coffee	
Instant Coffee	
Tea	
Soft Drink	
Restaurant Meals	3.10
Breakfast	
Lunch	
Dinner	
Snack	
Carry-Out Meal	

NON-FOOD ITEMS

Category	Weight
Personal Care Products	2.42
Soap	
Shaving Cream	
Toothpaste	
Shampoo	
Hair Colour	
Cream/Lotion	
Cologne	
Deodorant	
Razor Blades	
Patent Medicine	
Cold Remedy	
Vitamins	
Bandages	
Cosmetics	
Toilet Tissue	
Sanitary Napkins	
Disposable Diapers	
Prescribed Medicine	
Men's Haircut	
Women's Haircut	
Household Supplies	1.12
Facial Tissues	
Garbage Bags	
Light Bulbs	
Stationery	
Food Wrap	
Aluminum Foil	
Paper Towels	
Dish Soap	
Dishwasher Detergent	
Fabric Softener	
Detergent	
Bleach	
Scouring Powder	
Floor Wax	
Household Services	.80
Dry Cleaning	
Coin Laundry	
Shoe Repair	
T.V. Repair	

Category	Weight
Household Services (cont'd)	
Plumber	
Jewellery Repair	
Tailoring	
Household Equipment	.73
Garden Supplies	
Garbage Can	
Electric Drill	
Bed Sheets	
Towels	
Blow Dryer	
Vacuum Cleaner	
Coffee Maker	
Dishes	
Covered Casserole	
Recreation, Leisure	5.83
Television	
Record	
Camera	
Camera Film	
Film Processing	
Batteries	
Driving Lessons	
Motel	
Newspaper	
Magazine	
Beer Consumed in Licensed Premises	
Liquor Consumed in Licensed Premises	
Cigarettes	
Sporting Event	
Sporting Equipment	
Monopoly Game	
Admission to Movie	
Flowers	
Bicycle	
Camping Equipment	
Transportation	13.28
Gasoline	
Oil	
Automobile Equipment	
Oil Changes	
Towing Charge	
Parking	
Taxi Fare	
Car Rental	
Tires	
Car Repair Part	
Minor Tune-Up	
Auto Insurance	
Car	
Truck	

Category	Weight
Clothing	4.78
Women's:	
Raincoat	
Sweater	
Suit	
Blouse	
Dress	
Slacks	
Brassiere	
Briefs	
Slip	
Pantyhose	
Wrist Watch	
Purse	
Men's:	
Coat	
Suit	
Dress Slacks	
Shirt	
Casual Slacks	
Jeans	
Sports Shirt	
Sportswear	
Sweater	
Briefs	
Undershirt	
Socks	
Wallet	
Wrist Watch	
Boys':	
Jeans	
Jacket	
Sports Shirt	
Briefs	
Socks	
Girls':	
Jacket	
Slacks	
Jeans	
Socks	
Infants':	
Sleepers	
Footwear:	
Men's Dress Shoes	
Men's Casual Shoes	
Women's Dress Shoes	
Women's Casual Shoes	
Girls' Shoes	
Material	
Zipper	
Shelter	17.27
Tenants' Insurance	
New House	
Rental Costs	
Property Taxes	
Utilities	4.10
Natural Gas	
Electricity	
Water & Sewage	